

### REMARKS

Claims 25-41 are pending the application.

Claims 1-34 have been cancelled.

Claim 37 has been cancelled.

Claim 39-41 have been cancelled.

The drawings are objected to due to the absence of numerals 57, 59 and 49 from Figure 2. At page 11, the numerals "59" and "49" have been changed to "37" and "43," respectively. A Replacement Sheet which includes the missing numeral 57 from Figure 2 is submitted herewith. Also, a "proof" sheet of drawings, containing Figure 2 is included and on which the added numeral 57 is indicated in red for the Examiner's approval. Upon such approval, entry of the Replacement Sheet into the present application is requested.

A new Sheet containing Figure 12 is submitted with the request that this new Sheet be incorporated into the present application. Figure 12 depicts a "cutaway" view of a standard M-15 rifle as referred to at page 25, line 2; page 26, line 9, et seq; 27, line 39; and page 28, line 4. At page 28, beginning at line 4, the firing of the projectiles from a standard M-16 military rifle is discussed, including its "closed gas system for operation of the bolt of the rifle". The military M-16 rifle is well known to those skilled in the art, including its feature of a closed gas system for operation of the bolt of the rifle. An excerpt from [www.world.guns.ru/assault/as18-e.htm](http://www.world.guns.ru/assault/as18-e.htm) is enclosed. This document records that the closed gas system for the operation of the bolt of the M16 (also known as the AR15) rifle was developed in the 1950s by Eugene Stoner, a well recognized gun designer and manufacturer and is "The heart of the AR-15". Accordingly, no new matter is associated with the addition of Figure 12 as presented herewith.

Claims 35-38 and 41 stand rejected under 35 USC 112, second paragraph, as being indefinite.

Claim 35, lines 8-9 and 11-12 are noted by the Examiner to include the term "a projectile" whose relationship to the "previously claimed 'projectile'" is questioned. As understood, the Examiner is questioning whether the "projectile" recited in the

preamble of Claim 35 is the same "projectile" recited in the body of Claim 35 at lines 8-9 and 11-12.

Claim 35 has been amended to include therein the elements of Claim 41, and Claim 41 has been cancelled.

As amended, Claim 35 includes the step of providing a projectile having specified properties. Among other things, this language clarifies the Examiner's question regarding the relationship of the "projectile" recited in the preamble and the "projectile" recited in the body of the Claim.

The Examiner has posed the question of "what weight is intended by the phrase "the overall weight of a comparable sized lead projectile". Claim 35 has been amended to eliminate the term "overall" and the weight aspect of the projectile is now defined as between the claimed projectile and a lead projectile of comparable size and geometry. This amendment is believed to definitely define this aspect of the claimed invention.

Notably, the weight of the projectile is of importance in that such weight combines with the gun powder in the cartridge case to propel the projectile from the weapon at subsonic speed. As discussed at page 30, lines 32 et seq. the "combination" of the weight of the projectile and the selected gun powder added to the case provides for the necessary buildup of appropriate gas pressure within the barrel of the rifle and in the closed gas system to both propel the projectile from the rifle at subsonic speed and to operate the bolt of the rifle when fired in the semi-automatic or automatic mode.

The question of lack of antecedent basis for the term "said combination" has been cured through rewording of the final paragraph of Claim 35.

In response to the Examiner's observation, the term "closed end" has been changed to "open end" in Claim 35, line 18.

Claim 36 is dependent from amended claim 35.

Claim 37 has been cancelled.

In view of the foregoing, it is believed that the language of Claims 35 and 36, as amended is definite. Withdrawal of the objections to these Claims as being indefinite under 35 USC 112, second paragraph, is respectfully requested.

Claims 35-36 stand rejected under 35 USC 103(a) as being unpatentable over Stevenson et al in view of Kirst et al.


At the outset, it is noted that the Examiner has indicated that Claim 41 is allowable is amended to overcome the rejections under 35 USC 112 and to include each of the elements of its parent Claim and any intervening Claim. Claim 41 is dependent directly from Claim 35. By the present response, the elements of Claim 41 have been incorporated into Claim 35, thereby effecting the Examiner's requirement for the allowability of Claim 41 by combining Claim 41 and Claim 35.

Claims 36 and 38 are each dependent on Claim 35, as amended. Allowance of these Claims has been indicated if they are amended to overcome the rejections under 35 USC 112 and to include each of the elements of their parent and any intervening Claim(s). This action has been taken so that Claims 36 and 38 are now in condition for allowance.

Per the amendments to Claims 35, 36 and 38, these Claims are in condition for allowance. Withdrawal of the rejections of one or more of these Claims, as amended, under 35 USC 103(a) is respectfully requested.

Reconsideration of the application and allowance of amended Claims 35, 36 and 38 are respectfully requested.

Respectfully submitted,

  
Paul E. Hodges  
Reg. No. 20,972

11/24/04

Date  
Pitts & Brittian, P.C.  
P.O. Box 51295  
Knoxville, Tennessee 37950-1295  
(865) 584-0105 Voice  
(865) 584-0104  
peholdges@pitts-brittian.com

Modern Firearms - AR-15 M16 M16A1 M16A2 M16A3 assault rifle

The original AR-15 rifle is a gas operated, selective fire, magazine fed weapon. Every rifle from the M16 family is generally the same, but most civilian AR-15 type rifles are semi-automatic only.

The heart of the AR-15 is the direct gas system, developed by the Eugene Stoner in the early 1950s. This system uses no conventional gas piston and rod to propel bolt group back after the shot is fired. Instead, the hot powder gases are fed from the barrel and down to the stainless steel tube into the receiver. Inside the receiver, the rear end of the gas tube enters into the "gas key", a small attachment on the top of the bolt carrier. The hot gases, through the gas key, enter the hollow cavity inside the bolt carrier, and expands there, acting against the bolt carrier and the collar around the bolt body. The pressure of the gases causes the bolt carrier to move back against initially stationary bolt. The linear rearward movement of the carrier initially transferred into the rotation of the bolt, via the cam slot in the bolt carrier and the cam pin, attached to the bolt, that followed the slot. As soon as the bolt is rotated to unlock from the barrel, the bolt group continues its rearward travel under the inertia and the residual pressure in the barrel, extracting the spent case and compressing the buffer return spring, located in the buttstock. The forward movement of the bolt group first strips the fresh cartridge from the magazine and, on the final stage of the movement, rotates the bolt to lock into the barrel extension. The bolt has 7 radial locking lugs, eight lug is located on the extractor claw. Since the introduction of the XM16E1 rifle, the forward assist device is used on all military and most civilian AR-15 type rifles. This device consist of the spring-loaded button with internal claw, that engages the serrations on the right side of the bolt carrier to push it forward, if the pressure of the return spring is insufficient to do so (for example, due to the fouling inside the receiver or chamber). The rifle will not fire unless the bolt is locked and the bolt carrier is in its forwardmost position. The bolt carrier and the bolt itself are chrome-plated. Another feature of the AR-15 type rifles is the bolt catch device, that locks the bolt group in the open position when the last round is fired. To release the bolt group one must push the button, located at the left side of the receiver, above the magazine. The "T"-shaped cocking handle is located at the rear of the receiver, above the buttstock, and does not reciprocate when gun is fired.

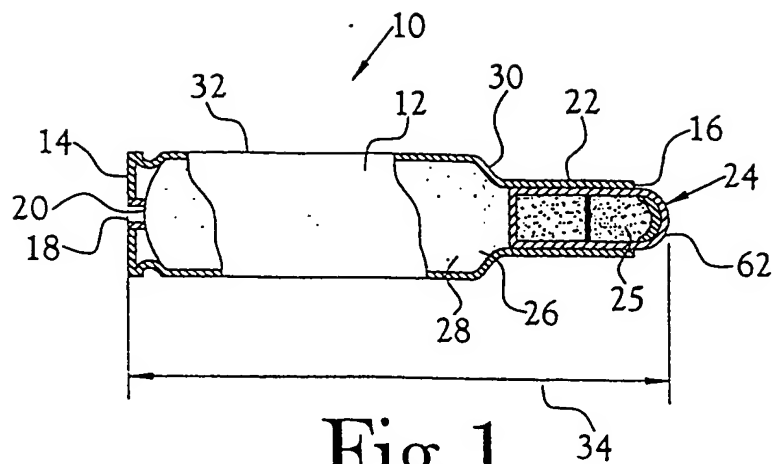


Fig.1

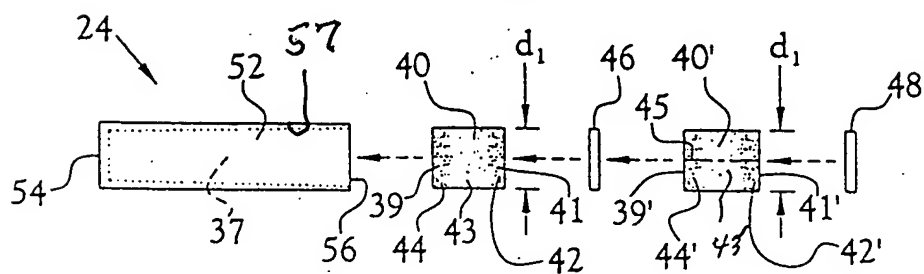


Fig.2

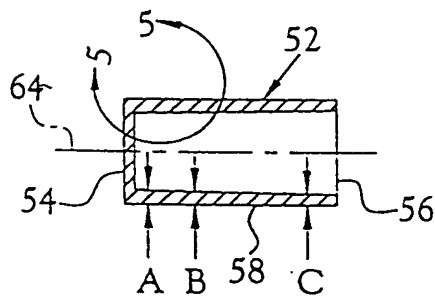


Fig.4

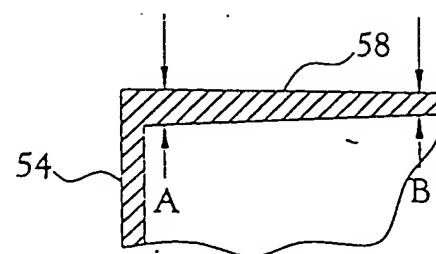


Fig.5

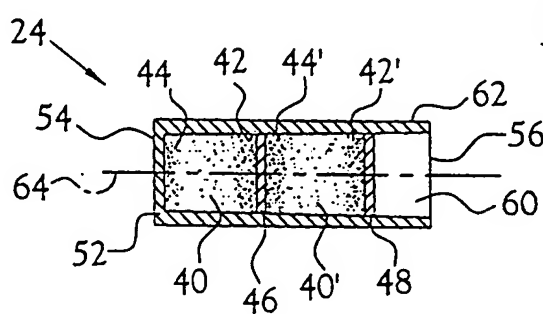


Fig.6

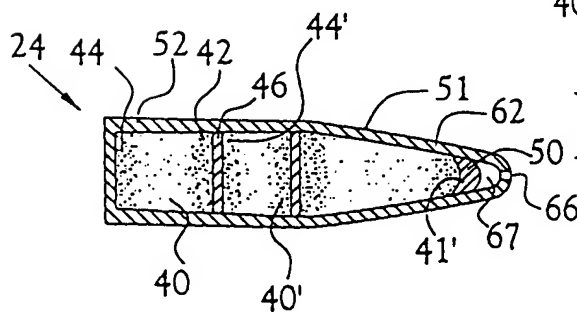


Fig.7

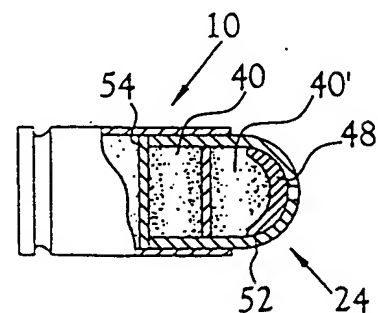


Fig.8